

REMARKS

Introduction

Claims 13-24 are currently pending. For at least the reasons set forth below, Applicant submits that the claims are in condition for allowance.

Amended Claims

Amended claim 13 does not add any new matter, and the amendments are directed only to form, providing additional clarification that the recited step of “performing a correction of the first estimation” is the first estimation of the pulse response and not the recited estimation of the additive interference. Therefore, Applicant submits that the present amendment is proper under 37 C.F.R. §1.1116, and entry and examination of the pending claims are respectfully requested.

Amended Specification

Applicant has provided clarifying amendments to the background section of the present application. These amendments do not add any new matter, but are merely directed to form, providing further clarification of the Applicant’s Admitted Prior Art (AAPA). Applicants seek to include clarifying language, thereby obviating confusion regarding the AAPA with respect to present invention and further delineate the express distinction between intersymbol interference and additive noise. For example, the sentence spanning line 17 to line 20 of the Substitute Specification has been updated to clarify that the additive noise is inherent in a transmission channel, where the transmission itself is to be estimated. Additionally, the final sentence has been added to further clarify that the examples of known techniques for partially correcting inaccurate transmission channel coefficient (e.g., POCS) do not account for additive noise. Therefore, Applicant requests entry of the present amendment to the specification.

Objections to Specification

The Examiner lists 5 separate objections to the specification. Applicant respectfully traverses the objections because the alleged bases for the noted objections are clearly contradicted by the Substitute Specification (all page and line numbers are based on the substitute specification):

- (1) The variable “W” is described on page 3, lines 9-10;

- (2) The variable "L" is described on page 3, lines 16-17;
- (3) The variables " γ " and "G" are described on page 3, lines 25-26;
- (4) The variables "F" is described on page 4, line 4; and
- (5) The equations have been individually numbered.

Therefore, withdrawal of these objections is respectfully requested.

Rejection of claims under 35 U.S.C. §102(b)

Claims 13-14, 21-22 and 24 are rejected under 35 U.S.C. §102(b) as being anticipated by Applicants Admitted Prior Art ("AAPA"). Applicant notes that the rejection should be withdrawn because AAPA fails to identically disclose each of the claimed limitations.

To anticipate a claim under 35 U.S.C. §102(b), a single prior art reference must identically disclose each and every claim feature. See Lindeman Machinenfabrik v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984). If any claim feature is absent from a prior art reference, it cannot anticipate the claim. See Rowe v. Dror, 112 F.3d 473, 478 (Fed. Cir. 1997).

In support of the present rejection, the Examiner relies entirely on the background section to support the disclosure of the AAPA. As discussed above, this section of the specification has been amended to provide further clarification and obviate any confusions regarding the AAPA with respect to the recited claims 13 and 24. In this regard, Applicant notes the apparent confusion by the Examiner regarding the statement on lines 17-20 on page 1 of the substitute specification. Based on the "Response to Arguments" section on pages 2-3 of the present Office Action, it appears the Examiner has misinterpreted the AAPA as disclosing estimation of the additive noise, which estimation is inherent. As explicitly amended, this interpretation is clearly incorrect. The AAPA discloses that the estimated transmission channel includes inherent additive noise. The AAPA does not include any estimation of this additive noise and does not estimate the additive noise.

Applicant submits that the Examiner's misinterpretation of the AAPA negates the present anticipation rejection. In view of the clarifying amendments to the specification, Applicant submits that the AAPA fails to identically disclose all of the claimed limitations.

Among other limitations, claims 13 recites "performing a correction of the first estimation of the pulse response while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel." (Emphasis added) Additionally, among other limitations, claim 24 recites, "a channel estimation correcting element for

correcting a signal of the channel estimator while taking into consideration an output signal of the estimator of the additive interference of the memory-enabled transmission channel." (Emphasis added). AAPA discloses that inherent additive noise / interference of estimated transmission channels results in transmission channel coefficients being greater than actual values. Non-linear reworking techniques can attempt to partially correct the inaccurate transmission channel coefficients. AAPA discloses POCS as an example of such non-linear reworking technique. The AAPA does not disclose estimating additive interference, but merely states that this inherent element can cause the estimated transmission channel coefficients to be incorrect. Therefore, the techniques to correct the coefficients do not include any estimated additive interference, as these elements are not generated. Stated another way, non-linear reworking techniques attempt to solve problems caused because of additive interference, but the AAPA does not disclose performing these corrections based on or taking into consideration the additive interference.

For at least the foregoing reasons, the anticipation rejection of claims 13 and 24 is improper because the AAPA fails to identically disclose all of the claimed limitations. Additionally, since claims 14 and 21-22 depend from claim 13, these dependent claims are allowable for at least the reasons stated above in connection with claim 13.

Therefore, reconsideration and withdrawal of the anticipation rejection of claims 13-14, 21-22 and 24 is respectfully requested.

Claims 13, 16 and 24 are rejected under 35 U.S.C. §102(b) as being anticipated by WO 98/44655 ("Andersson"). The anticipation rejection should be withdrawn because Anderson fails to identically disclose each of the claimed limitations.

To anticipate a claim under 35 U.S.C. §102(b), a single prior art reference must identically disclose each and every claim feature. See Lindeman Maschinenfabrik v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984). If any claim feature is absent from a prior art reference, it cannot anticipate the claim. See Rowe v. Dror, 112 F.3d 473, 478 (Fed. Cir. 1997).

Claims 13 and 24 are directed to a method and device, respectively, for estimating a memory-enabled transmission channel. The present invention provides an improved estimation of the channels by additionally including the information regarding the additive interference of the transmission channel. More specifically, amended claims 13 and 24 recite, *inter alia*, "performing a correction of the first estimation while taking into

consideration the estimation of the additive interference of the memory-enabled transmission channel.” (Emphasis added).

In contrast, Andersson is directed to processing of received radio signals, which processing includes compensating for inter-symbol interference (ISI) caused by non-synchronous sampling of received signals. As noted on page 11, lines 11-14 of Andersson, the ISI is introduced by “sampling a signal in an unsynchronized manner,” which is also noted as being the asynchronous conversion of the analog signal to the digital signal and capable of being parameterized and easily determined. (See, for example, Andersson, page 4, line 28 – page 5, line 2). Andersson clearly fails to disclose the claimed additive interference of the memory-enabled transmission channel; instead, Andersson clearly and explicitly discloses that the ISI is from non-synchronous sampling. Therefore, Andersson fails to identically disclose every claimed limitation of claims 13 and 24.

For at least the foregoing reasons, claims 13 and 24, as well as dependent claim 16, are allowable over Andersson.

Therefore, reconsideration and withdrawal of the anticipation rejection as to claims 13, 16 and 24 are respectfully requested.

Rejections under 35 U.S.C. §103(a)

Claims 14 and 21-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Andersson in view of AAPA. Withdrawal of the obviousness rejection is requested in view of the following explanation.

In rejecting a claim under 35 U.S.C. §103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091 (Fed. Cir. 1986). Third, the prior art references must teach or suggest all of the claimed limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claims 14 and 21-22 depend from claim 13 and recite further patentable subject matter. In addition, as previously noted, neither Andersson nor AAPA actually teaches the

parent claim's claimed feature of "performing a correction of the first estimation while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel." Accordingly, Applicant submits that dependent claims 14 and 21-22 are not rendered obvious by the combination of Andersson and AAPA.

Claims 15 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Andersson, AAPA and "Low Cost Channel Estimate in the Uplink Receiver of CDMA Mobile Radio Systems," by Steiner et al., ("Steiner"). Claims 15 and 23 ultimately depend on claim 13 and recite further patentable subject matter. In addition, as previously noted, neither Andersson nor AAPA actually teaches the parent claim's claimed feature of "performing a correction of the first estimation while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel." Furthermore, Steiner fails to remedy the deficiencies of Andersson and AAPA as applied against parent claim 13. Accordingly, Applicant submits that dependent claims 15 and 23 are not rendered obvious by the combination of Andersson, AAPA and Steiner.

Claims 15 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over combinations of AAPA and Steiner. Claims 15 and 23 ultimately depend on claim 13 and recite further patentable subject matter. In addition, as previously noted, AAPA clearly does not teach the parent claim's claimed feature of performing a correction of the first estimation while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel." Furthermore, Steiner fails to remedy the deficiencies of AAPA as applied against parent claim 13. Accordingly, Applicant submits that dependent claims 15 and 23 are not rendered obvious by the combination of AAPA and Steiner.

Claim 16 stands rejected under 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Andersson. Claim 16 depends from claim 13 and recites further patentable subject matter. In addition, as previously noted, neither AAPA nor Andersson actually teaches the parent claim's claimed feature of "performing a correction of the first estimation while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel." Accordingly, Applicant submits that dependent claim 16 is not rendered obvious by the combination of AAPA and Andersson.

Claim 17 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Andersson in view of Steiner. Claim 17 ultimately depends on claim 13 and recites further patentable subject matter. In addition, as previously noted, Andersson clearly does not teach the parent claim's claimed feature of performing a correction of the first estimation while

taking into consideration the estimation of the additive interference of the memory-enabled transmission channel.” Furthermore, Steiner fails to remedy the deficiencies of Andersson as applied against parent claim 13. Accordingly, Applicant submits that dependent claim 17 is not rendered obvious by the combination of Andersson and Steiner.

Claim 17 stands rejected under 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Andersson and further in view of Steiner. Claim 17 ultimately depends on claim 13 and recites further patentable subject matter. In addition, as previously noted, neither AAPA nor Andersson actually teaches the parent claim’s claimed feature of performing a correction of the first estimation while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel.” Furthermore, Steiner fails to remedy the deficiencies of AAPA as applied against parent claim 13. Accordingly, Applicant submits that dependent claim 17 is not rendered obvious by the combination of AAPA, Andersson and Steiner.

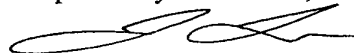
Allowable Subject Matter

Examiner objected to claims 18-20 as being dependent upon a rejected base claim, claim 13, but the Examiner also indicated that claims 18-20 contain allowable subject matter. Since claim 13 has been shown to be in allowable condition, Applicant submits that dependent claims 18-20 are allowable in their present dependent form.

Conclusion

In light of the foregoing, Applicant respectfully submits that all of the pending claims 13-24 are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore respectfully requested.

Respectfully submitted,



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